

Bilateral Malignant Seminoma in Two Dogs

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Summary

In this report, the cases of bilateral diffuse malignant seminoma encountered on testes of 12 and 14 years old, male, cross-breed two dogs were evaluated clinically and pathologically. Both cases were referred to surgery clinic with the complaint of swelling in scrotum. Through microscopic examination, bilateral diffuse malignant seminoma was diagnosed in both cases.

Keywords: Dog, Scrotal enlargement, Malignant seminoma

İki Köpekte Bilateral Malign Seminom

Özet

Bu gözlemede, 12 ve 14 yaşlı, erkek, melez iki köpekte karşılaşılan bilateral malign seminom olgusu klinik ve histopatolojik olarak değerlendirildi. Her iki olgu da skrotumda büyüme şikayeti ile cerrahi kliniğine getirildi. Mikroskopik incelemede her iki olguya da bilateral diffuz malign seminom tanısı konuldu.

Anahtar sözcükler: Köpek, Skrotal büyüme, Malign seminoma

INTRODUCTION

Scrotal enlargement occurs in dogs when testis tumour, hernia scrotalis, funiculus spermaticus torsion, spermatocele, hydrocele, and orchitis cases are evident ¹⁻³. Testis tumours usually occur in dogs at advanced age (mean 10) ⁴⁻⁶, and they are classified into three groups, namely gonadostromal tumours (interstitial-Leydig cell and sertoli cell tumours), germ cell tumours (seminoma, teratoma, and embryonal carcinoma) and other tumours (mesothelioma and vascular tumours) ^{4,5}. While seminomas account for 33% of testis tumours in dogs, they develop unilaterally and are mostly benign, and to a lesser degree in malignant ^{4,5,8,9}. In its malignant form, its common symptoms are enlargement of testis, bleeding and necrosis ⁵.

The aim of this report is to describe clinical course, and to present istopathological evaluation results of bilateral malignant diffuse seminoma cases observed in the two dogs.

CASE HISTORY

The first case was a cross-breed, male, 12-year-old dog

whose weight was 26 kg. Regarding its history, it is an indoor dog and it was not taken out while there was enlargement experienced in scrotum within the last year, which progressed to the degree that it would limit its movement ability. In terms of clinical symptoms, the scrotum causes difficulty walking such that the dog was unable to step on hind legs which led unwillingness for walking. Through palpation, it was determined that the scrotum was quite large (*Fig. 1A*) with soft consistency. There was no pain evident during palpation of the funiculus spermaticus and testis. Scattered ulcerative areas were seen on the scrotum.

The second case was a 14-year-old, cross-breed dog whose weight was 24 kg. In the anamnesis, the dog was taken out, scrotal enlargement developed within the last 6-8 months and finally it was referred to our clinic. Clinically, a marked volume increase was observed in the right half of the scrotum compared to the opposite half. The testis with hypertrophy and at hard consistency and funiculus spermaticus were felt during palpation and there was no symptom of pain. Dog was able to walk as usual. For



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both cases, brucella results were negative based on the agglutination test. During the ultrasonographic and the radiological examinations, no pathological finding was observed in the abdomen and thorax regions of the animals. As a result of the clinical, radiological and laboratory examinations, it was decided to remove scrotal tissue and testis together in the first case; and only the testis in the second case. For the operation, the dogs were sedated with 1 mg/kg intramuscular Xylazine HCl injection (Alfazine® Egevet, Turkey). Then, 4 mg/kg intravenous propofol (Propofol 1%® Fresenius, Sweden) was administered for induction. With intubation, anesthesia was maintained at 1.5-2% concentration isofluran (Isoflurane® Adeka). The funiculus spermaticus were accessed with a blunt dissection. Occurred hemorrhagies (Fig. 1B) were controlled by means of hemostatic forceps and ligatures (2/0 polyglactin 910, Vicryl®, Ethicon, Edinburg). Testes were removed by placing hemostatic forceps approximately 1 cm below the trans-fixation ligatures and by cutting between ligatures and hemostatic forcep, and then the scrotum was removed with incision through the incision line. The incision line on the regional skin was closed with simple sutures (2/0 silk suture, Silk® Kruuse); and the operation was completed (Fig. 1C). In the second case, the orchiectomy operation was performed. After the operation, the tissue samples obtained from the testes and scrotum were fixed in 10% neutral buffered formalin solution; embedded in parafin wax, sectioned at 5 µm, and stained by routine methods with haematoxylin and eosin (H&E) and examined under the light microscope⁶.

Macroscopically, in the first case, while the left testis was at the size of 5.9x3.9x3.4 cm and its weight was 60 g, the size of the right testis was 3.6x3.4x2.4 cm and its weight was 39.2 g. A homogenous appearance was evident on the sections of both testes but grayish-white multilobular areas were located in all of left testis while the diameter of the right testis was 1.3 cm (Fig. 2A). The weight of the scrotum removed with testis was 1.900 g and its size was 22x 23x8 cm. Its exterior was covered with skin and its texture was presenting soft consistency. Homogenous structure of the scrotum section was quite edematous with grayish white color (Fig. 2B). In the second case, the size of the right testis was 12x7.5x3.8 cm and it was weighted 300 g while the size of the left testis was 5.4x4.9x3.4 cm

and it was weighted 65 g. The exterior of both testes were presenting nodular appearance; and at their cross sections, the multilobular grayish white areas were in various sizes with well defined borders (Fig. 2C). In terms of microscopic examination, the tumour tissues in the testes of both cases were consisted of anaplastic cells diffusely spread in various sizes. These cells were in polyhedral shape with sharp edges, vasicular nuclei, which was usually about 1-2 nucleoli, and slightly basophilic cytoplasm (Fig. 2D). The number of mitotic figures in tumour area was between 2 and 3. In many areas, single or multi nucleated tumour type giant cells can be observed. In view of pathological findings, both cases were diagnosed as malignant diffuse seminoma. In the first case, together with edema in the dermis layer of scrotum, the hyperemia in vessels and the inflammatory cell infiltrations consisting of plasma cells and lymphocytes were remarkable.

DISCUSSION

In animals, hernia scrotalis, funiculus spermaticus torsion, spermatocele, hydrocele, orchitis and testis/testes tumours are the most common causes of scrotal enlargement². In the first case, both testis had normal anatomical structure, funiculus spermaticus torsion, spermatocele and hydrocele were not present and no finding regarding infection was found in microbiological and pathological examinations, which suggested that scrotal enlargement was not associated with infection. The facts revealed as a result of the histopathological examination that the tumour was formed in both testes, and that the dermis was quite edematous, suggested that the enlargement in scrotum was a complication of the existing tumour.

For the malignant seminoma cases with metastasis, radiotherapy and chemotherapy are recommended; and for the cases without metastasis, castration is referred⁷. In the first case, testes were removed together with the scrotum while only testes were removed in the second case. During the first operation of the first case, abnormal vascularization and bleeding were observed until funiculi spermaticus were reached after the incision. Bleeding was controlled through hemostatic pens, cauter and ligatures.



Fig 1. A- Appearance of the scrotum before the operation, B- Appearance of the testes removal from the inside of scrotum (arrowhead: left testis, arrow: right testis, *: skrotum), C- Postoperative incision line (case no 1)

Şekil 1. A- Operasyon öncesi skrotumun görünümü, B- Skroum içerisinde çıkarılan testislerin görünümü (ok başı: sol testis, ok: sağ testis, *: skrotum), C- Postoperatif ensizyon hattı

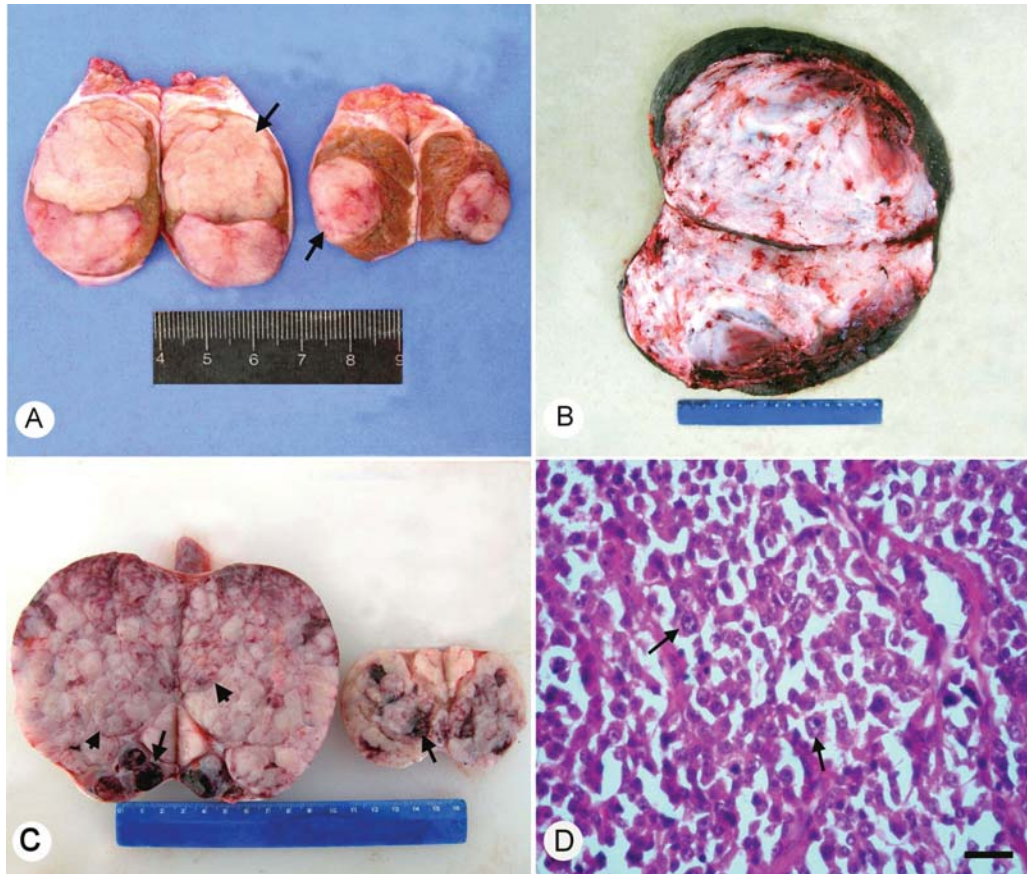


Fig 2. A- Multilobular grayish white areas at various sizes in the cross section of the both testes, (case no; 1), B- Macroscopic appearances of the cross section of the scrotum (case no; 1), C- Multilobular grayish white areas at various sizes (arrows) with bleeding areas (arrows) in the cross section of the both testes (case no; 2), D- The tumour was consist of had polyhedral shape, sharp edges and vasicular nuclei with slightly basophilic cytoplasm (case no; 1, right testis, arrows), HE. Bar: 50 μ m

Şekil 2. A- Her iki testisin kesit yüzünde değişen büyüklüklerde boz beyaz renkte alanlar (olgu no: 1), B- Skrotumun kesit yüzünün makroskopik görünümü (olgu no: 1), C- Testislerin kesit yüzlerinde değişen büyüklüklerde boz beyaz renkte alanlar (ok) ile birlikte kanamalar (oklar), (olgu no: 2), D- Tümör dokusunda diffuz dağılımlı, değişen büyüklüklerde, polihedral şekilli, keskin kenarlı, veziküler çekirdekli, hafif bazofilik sitoplazmalı anaplastik hücreler (olgu no: 1, sağ testis, oklar), HE. Bar: 50 μ m

During the operation of the second case, no abnormal bleeding was observed. It was concluded that in cases similar to first one, in which marked scrotal enlargement is present and testis are decided to be removed, some precautions must be taken before the operation against excessive bleeding which may occur during operation.

Seminomas arise from the germ cells that constitute the spermatogenic epithelium within the seminiferous tubules, and are subdivided on the basis of their histological appearance into intratubular and diffuse types ^{5,12}. The tumors in both cases, in the present study, was diagnosed as a tubular diffuse type malignant seminoma based on histopathological patterns ^{5,12,13}. Seminomas are classified as benign or malignant according to pleomorphic changes, mitotic activity and metastatic characteristics ^{8-10,13}. In both cases, although pleomorphic changes are evident, testis tumours in both cases were evaluated as malignant seminoma based on these characteristics and that mitotic activity was found rather low ^{7-9,11}. Although malignant seminomas are reported to metastasis in many cases ^{5,14,15}, no

such finding was seen before operation and during the examination on the 6th month.

Based on evaluation of the clinical and histopathological findings, it can be concluded that bilateral seminoma cases that do not metastasize in spite of long development process were found significant to be reported; and uncomplicated postoperative healing was emphasized.

REFERENCES

1. **Kustritz MVR:** Scrotal enlargement in a dog. http://www.tc.umn.edu/~rootk001/case_19.htm. Accessed: 03.06.2011.
2. **Hollet RB:** Canine Brusellosis: Outbreaks and compliance. *Theriogenology* 66, 575-587, 2006.
3. **Canine Brusellosis:** *Brucella canis*. BRUC_A2007-2012. Iowa State Universit. http://www.cfsph.iastate.edu/Factsheets/pdfs/brucellosis_canis. Accessed: 09.10.2011.
4. **Gülçubuk A, Gürel A:** 1995-2000 Yılları arasında İstanbul'da saptanan köpek tümörleri. *İstanbul Üniv Vet Fak Derg*, 29 (1): 83-91, 2003.
5. **MacLachlan NJ, Kennedy PC:** Tumours of the Genital System. In, DJ Meuten (Ed): *Tumours of the Domestic Animals*. 4th ed., pp. 561-565. Iowa

State Pres, Iowa, 2002.

6. Culling CFA, Allison RT, Barr WT: Cellular Pathology Technique. 4th ed., 269-270, Butterworth & Co. Ltd., London, 1985.

7. Wallace B, Morrison: Canser in dog and cats: medical and surgical management. 2nd ed., pp. 559-560. Teton NewMedia, Wyoming, US, 2002.

8. Erer H, Kıran MM: Konya'da 1985-1992 yılları arasında köpeklerde görülen tümörler. *Selçuk Üniv Vet Fak Derg*, 9, 87-89, 1993.

9. Sönmez G, Özmen Ö: Bursa'da 1988-1996 yılları arasında incelenen köpek tümörleri. *Uludağ Üniv Vet Fak Derg*, 15, 69-76, 1996.

10. Atalay V, Şahal M, Aydın Y: Bir köpekte ağızda fibrosarkom ve testislerde seminom olguları. *Ankara Üniv Vet Fak Derg*, 41 (3-4): 351-355, 1994.

11. Grieco V, Riccardi E, Rondena M, Ciampi V, Finazzi M: Classical and spermatocytic seminoma in the dog: Histochemical and immunohisto-

chemical findings. *J Comp Path*, 137, 41-46, 2007.

12. Maiolino P, Restucci B, Papparella S, Paciello O, Vico G. D: Correlation of nuclear morphometric features with animal and human world health organization international histological classifications of canine spontaneous seminomas. *Vet Pathol*, 41, 608-611, 2004.

13. Thorvaldsen TE, Nødtvedt A, Grotmol T, Gunnes G: Morphological and immunohistochemical characterisation of seminomas in Norwegian dogs. *Acta Vet Scand*, 54 (52): 2-8, 2012.

14. Takguchi M, Iida T, Kudo A, Hashimoto A: Malignant seminoma with systemic metastases in a dog. *JSAP*, 42, 360-362, 2002.

15. Lucas X Rodenas C, Cuello C, Gil MA, Parrilla I, Soler M, Belda E, Agut A: Unusual systemic metastases of malignant seminoma in a dog. *Reprod Dom Anim*, 47, e59-e61, 2012.